Mapping

Spreading code A B C D	Selected spreading -code data (m = 2 bits)
1 0 0 0	0 0
0 1 0 0	0 1
0 0 1 0	1 0
0 0 0 1	1 1

Number of assignment spreading code = 4
Coding scheme = "multiple number is fixed to 1"

FIG. 1

Mapping

Spreading code A B C D	Selected spreading -code data (m = 4 bits)
0 0 0 0	0 0 0 0
1 0 0 0	1 0 0 0
0 1 0 0	0 1 0 0
0 0 1 0	0 0 1 0
0 0 0 1	0 0 0 1
1 1 0 0	1 1 0 0
1 0 1 0	1 0 1 0
1 0 0 1	1 0 0 1
0 1 1 0	0 1 1 0
0 1 0 1	0 1 0 1
0 0 1 1	0 0 1 1
1 1 1 0	1 1 1 0
1 1 0 1	1 1 0 1
1 0 1 1	1 0 1 1
0 1 1 1	0 1 1 1
1 1 1 1	1 1 1 1

Number of assignment spreading code = 4
Coding scheme = "multiple number is not fixed"

FIG. 2

First candidate

Number k of assignment spreading codes (per one mobile station) / Coding scheme	4	8	12	16
Multiple number is not fixed	6	12	16	20
Multiple number is fixed to 6			15	19
Multiple number is fixed to 4		10	12	14
Multiple number is fixed to 2	4	6	8	8
Multiple number is fixed to 1	3	4	4	5
Error-correcting-coding scheme A	2	3	3	4
Error-correcting-coding scheme B	1	2	2	3

Second candidate

Third candidate

FIG. 3

First candidate

Number k of assignment spreading codes (per one mobile station) / Coding scheme	4	8	12	16
Multiple number is not fixed	-1.5	-1.0	-0.5	0
Multiple number is fixed to 6			-3.0	-1.0
Multiple number is fixed to 4		-5.0	-3.2	-2.0
Multiple number is fixed to 2	-8.0	-7.0	-4.5	-4.0
Multiple number is fixed to 1	-8.5	-7.5	-7.0	-6.0
Error-correcting-coding scheme A	-13.0	-11.0	-10.0	-9.0
Error-correcting-coding scheme B	-18.0	-15.0	-14.0	-12.0

Reference value 0[dB]

Second candidate

Third candidate

FIG. 4

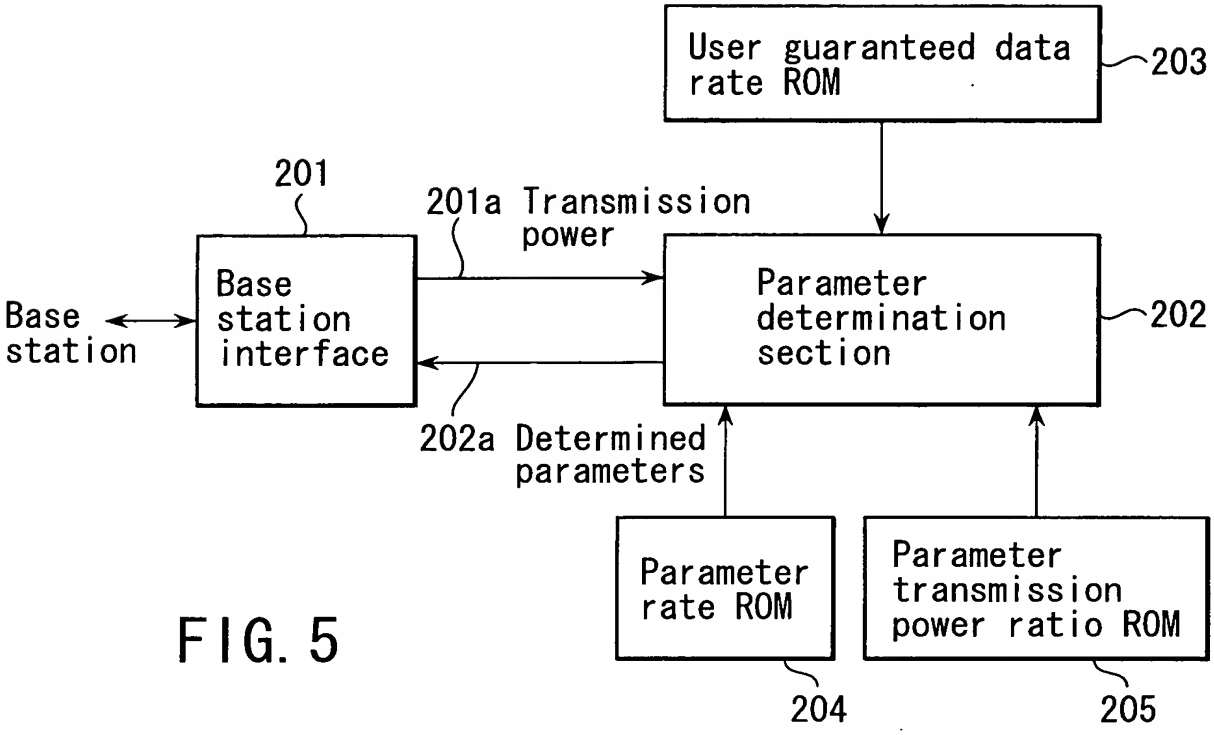

FIG. 5

Communication service	User guaranteed data rate
Mail	3
Still picture	5
Moving picture	10

FIG. 6

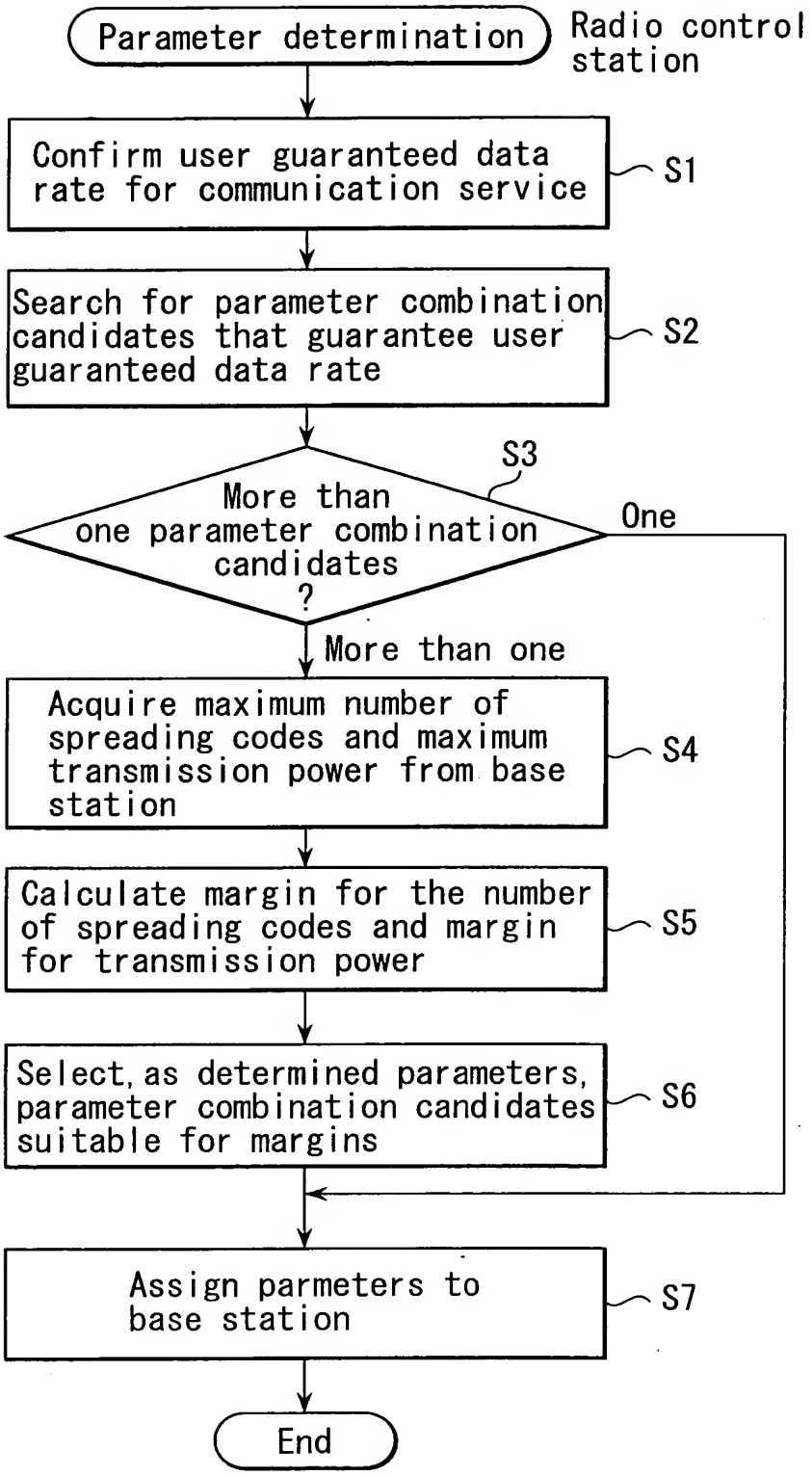
Parameter determination
Radio control station
Confirm user guaranteed data rate for communication service
S1
Search for parameter combination candidates that guarantee user guaranteed data rate
S2
S3
More than one parameter combination candidates ?
One
More than one
Acquire maximum number of spreading codes and maximum transmission power from base station
S4
Calculate margin for the number of spreading codes and margin for transmission power
S5
Select, as determined parameters, parameter combination candidates suitable for margins
S6
Assign parmeters to base station
S7
End

FIG. 7

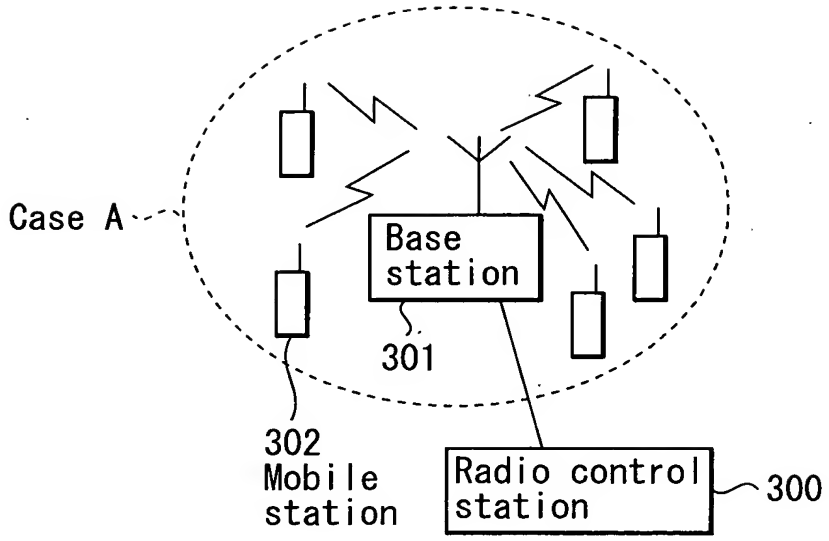
Case A
Base station
301
302
Mobile station
Radio control station
300

FIG. 8A

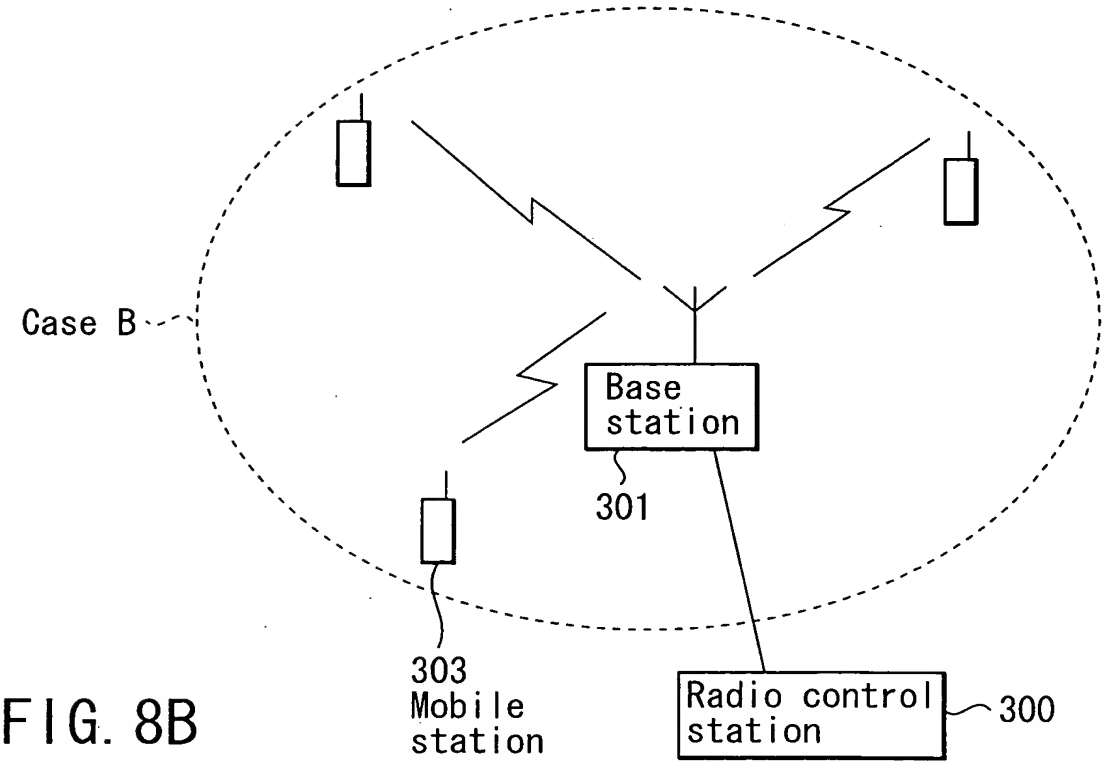
Case B
Base station
301
303
Mobile station
Radio control station
300

FIG. 8B

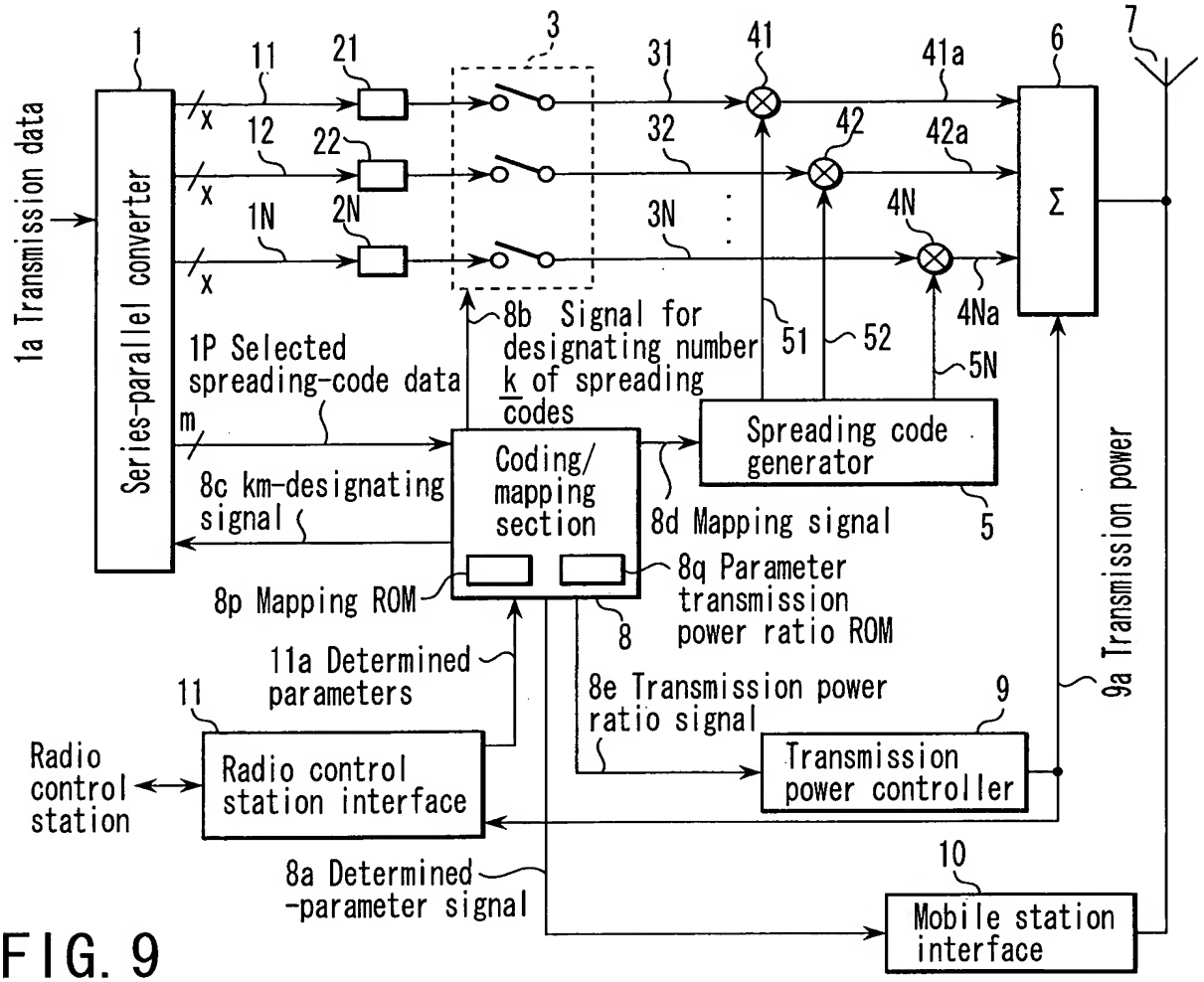
1a Transmission data
Series-parallel converter
1
11
21
3
31
41
41a
6
7
12
22
32
42
42a
Σ
1N
2N
3N
4N
4Na
8b Signal for designating number k of spreading codes
51
52
5N
1P Selected spreading-code data
m
Coding/ mapping section
Spreading code generator
8c km-designating signal
8d Mapping signal
5
8p Mapping ROM
8q Parameter transmission power ratio ROM
8
11a Determined parameters
11
8e Transmission power ratio signal
9
9a Transmission power
Radio control station
Radio control station interface
Transmission power controller
8a Determined -parameter signal
10
Mobile station interface

FIG. 9

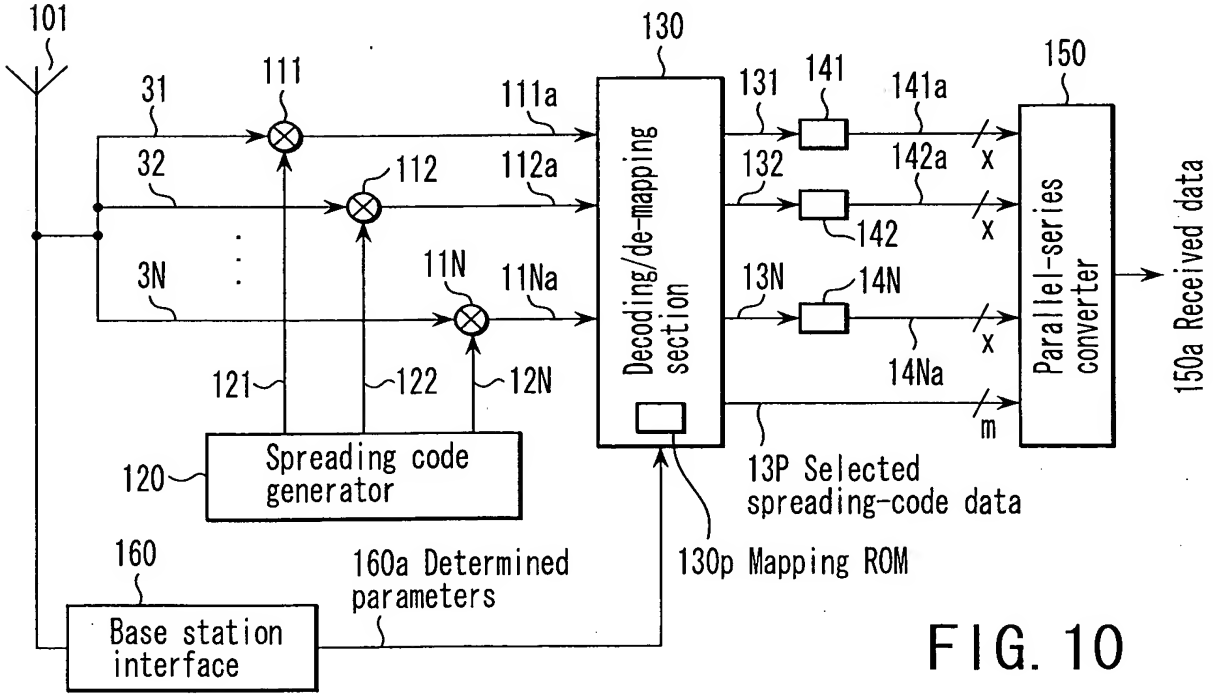
101
130
150
31
111
111a
131
141
141a
32
112
112a
132
142a
142
3N
11N
11Na
13N
14N
14Na
Decoding/de-mapping section
Parallel-series converter
150a Received data
121
122
12N
120
Spreading code generator
13P Selected spreading-code data
160
160a Determined parameters
130p Mapping ROM
Base station interface

FIG. 10

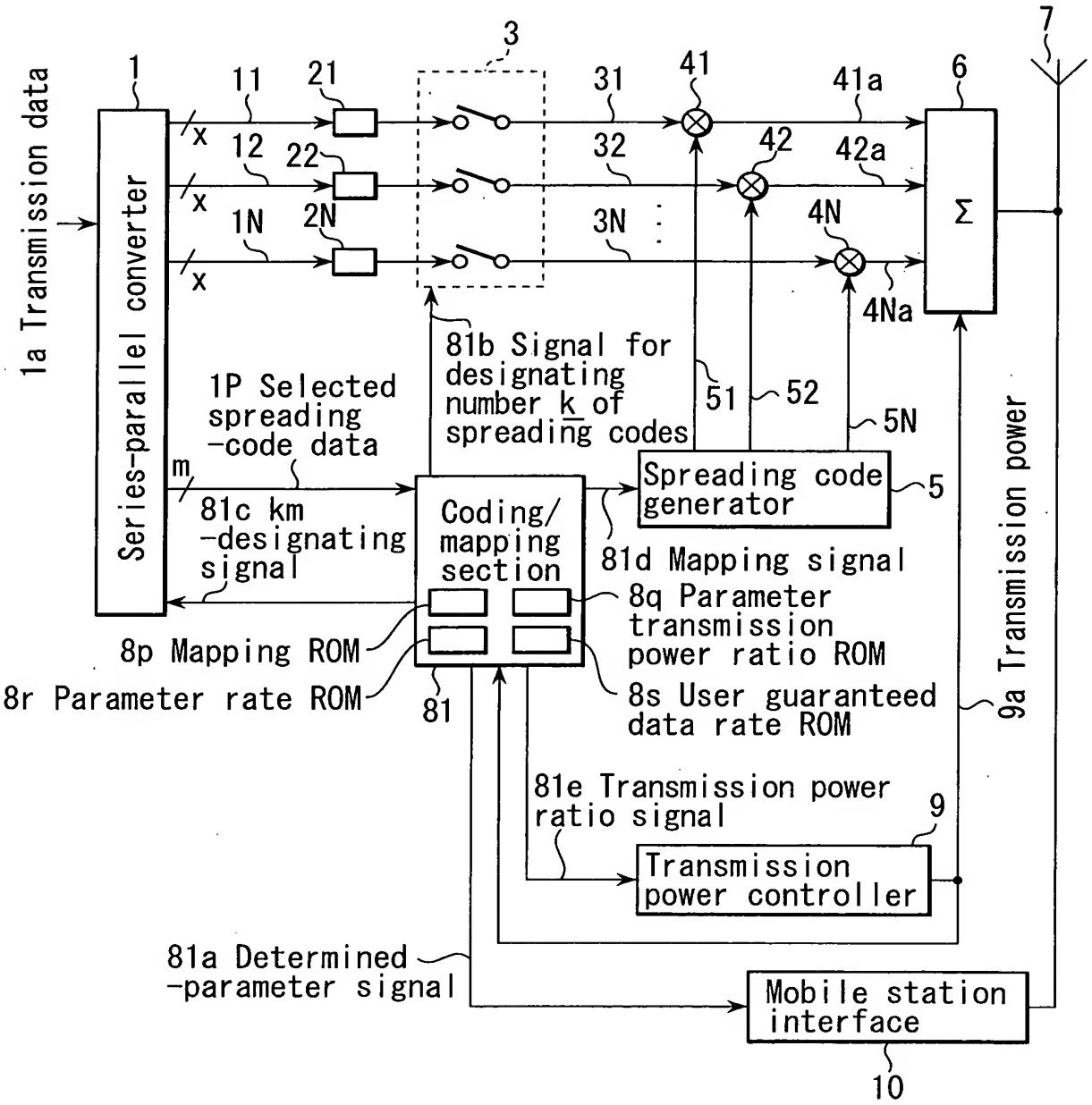
1a Transmission data
1
Series-parallel converter
x
x
x
11
12
1N
21
22
2N
3
31
32
3N
41
42
4N
41a
42a
4Na
6
Σ
7
81b Signal for designating number k of spreading codes
51
52
5N
1P Selected spreading -code data
m
81c km -designating signal
Coding/ mapping section
Spreading code generator
5
81d Mapping signal
8q Parameter transmission power ratio ROM
8p Mapping ROM
8r Parameter rate ROM
81
8s User guaranteed data rate ROM
9a Transmission power
81e Transmission power ratio signal
9
Transmission power controller
81a Determined -parameter signal
Mobile station interface
10

FIG. 11

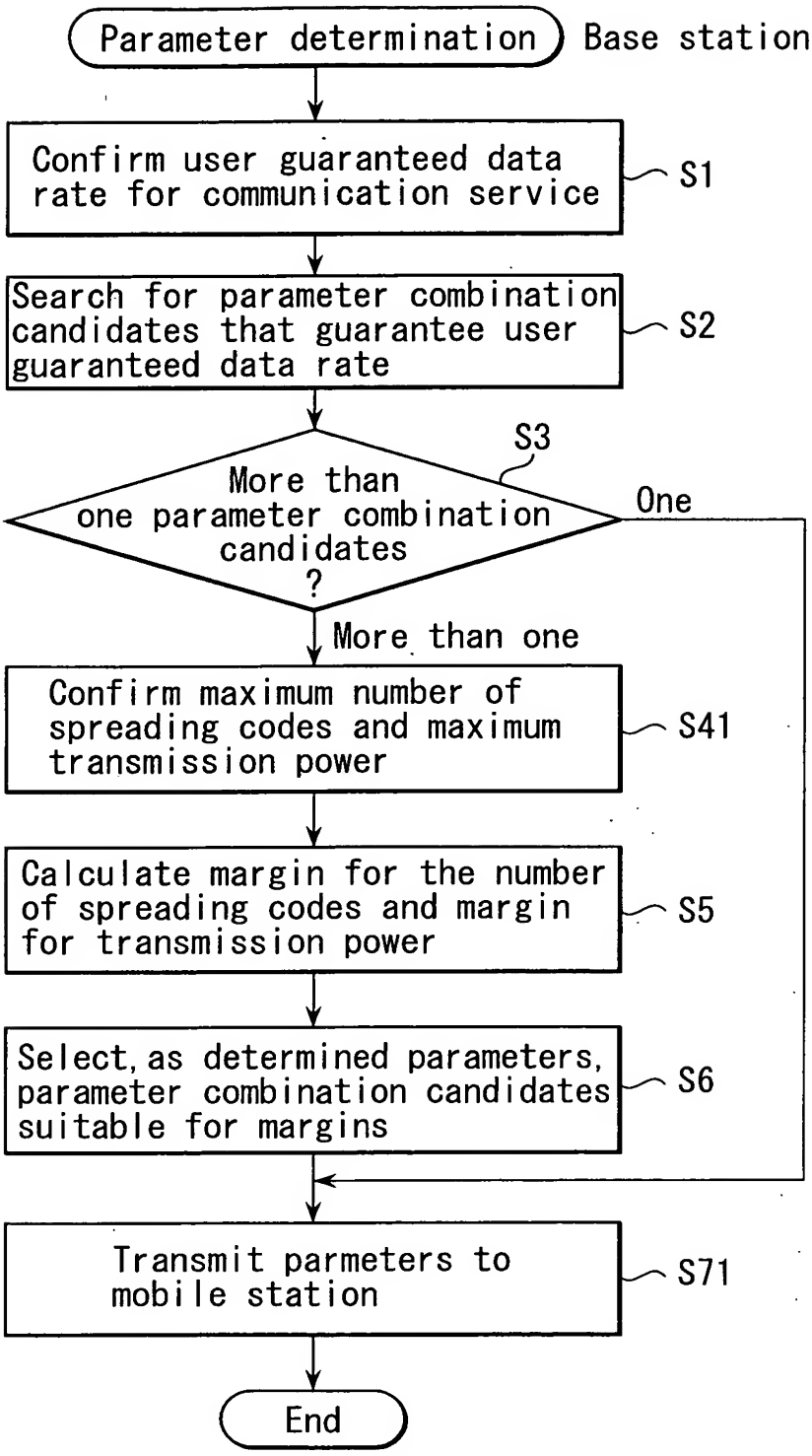
Parameter determination
Base station
Confirm user guaranteed data rate for communication service
S1
Search for parameter combination candidates that guarantee user guaranteed data rate
S2
S3
More than one parameter combination candidates ?
One
More than one
Confirm maximum number of spreading codes and maximum transmission power
S41
Calculate margin for the number of spreading codes and margin for transmission power
S5
Select, as determined parameters, parameter combination candidates suitable for margins
S6
Transmit parmeters to mobile station
S71
End

FIG. 12